

Yuba Basin Modeling Forum

Wednesday, September 15, 2004.

Welcome and Introductions:

On September 15, 2004, a meeting of the Yuba Basin Modeling Forum was convened in Sacramento. John Clerici, Public Affairs Management, provided meeting facilitation. The desired outcomes of the meeting included:

- Discuss and revise overall YBMF Conceptual Model Framework
- Receive presentations on selected models in the Yuba River Basin
- Identify discussion topics for next Forum meeting

Yuba Basin Modeling Forum

Aric Lester presented the Forum with a revised conceptual model framework for the Yuba Basin Modeling Forum. In addition to the four main categories outlined in the July 21st meeting (Physical, Chemical, Biological, and Social), the revised model now contains other subcategories based on the previous presentations by Dave Thomas and Lorrie Flint. Aric explained that the idea behind this framework is to provide an easy way to categorize and identify the links between the various models. He added that while the framework is presented in Adobe format, it can be in another format such as HTML if the group finds this more useful.

Janet Cohen of SYRCL (referencing a map of the watershed taken from the Upper Yuba River Studies Program) pointed out that the UYRSP doesn't include the North Yuba River and that the map should be revised to include it. Janet also expressed concern about how one includes data collection efforts into the framework, citing as an example the several education programs that SYRCL presently operates in the watershed. Paul Wisheropp of ENTRIX responded that a link could be added that would direct people to a site where more information could be found. Stefan Lorenzato of DWR added that if someone were developing a model and needed data information on a specific issue, this framework could be a way to find it. He suggested that SYRCL's data could be used to expand an existing model.

Janet asked about the ease of accessing specific information or topics within the framework. Stefan explained that the purpose of the framework is to provide useful information and that the goal is to make it as user friendly as possible. He also said that there are obvious connections that could be brought together by highlighting the linkages.

John asked each member of the group to comment on the conceptual framework. While the group supported the general progress made on the model, there were several comments and questions that would require further investigation. They included:

- Who would be responsible for maintaining the model?
- How would the separate modeling efforts fit together as more were added?
- What information would be included in the "social" category?

Aric responded that DWR would be responsible for the model, and that a website was being developed that would provide access. John stressed that the model was a work in progress, and what would be included under the various topics would be up to the Forum to decide. Additionally, as the model was

developed, methods would be assessed for making access to the information user friendly. Members of the group suggested either a keyword search or a cursor index as a way to easily access the information on the website.

Fraser Sime of DWR mentioned that he has been involved with this type of project before and that there are existing systems for creating a database library that may be useful for this effort. Fraser pointed out that the Sacramento River Watershed Program might be a good model to look at. John agreed to provide additional information on this subject at the next Forum meeting.

Flood Risk Management Studies of the Lower Yuba and Feather Rivers

Bob Mussetter gave a slideshow on his flood risk studies for the Upper Yuba River Studies Program. He explained that the project is on hiatus at the moment while other study efforts proceed. Bob said that they are using a variety of models that will result in a sediment routing analysis. Bob noted that one of the challenges facing the study team is the Work Group provision that there be “no net decrease in the level of flood protection,” on the Yuba River. Bob pointed out that this is difficult to put into technical use, and that they have been analyzing the following factors: water-surface elevation, potential damages, and mitigation measures.

Bob mentioned that the timing of sediment impacts and the incidence of extreme floods is very critical, particularly in the short term. He also said that if the dam is dismantled and there is a dry period, the risk for a severe flood is extreme. Bob explained that they are working with Lorrie Flint (flow and sediment transport studies) and will take the output from her model and input it into theirs.

Bob added that it is important to look at existing conditions for the study area, particularly historical channel morphology and the sedimentology in the river and Englebright reservoir. For historic geomorphic data, Bob looked at the Thalweg Profile Plot from 1912-2001 and determined that the capacity of the river is significantly higher now than it was at the turn of the century. This, Bob pointed out, has had a big effect on sediment movement. Other features that Bob has looked at include dredging fields and bed material sediment data.

Bob noted that the Yuba River is a cobble and sand bed system which makes traditional modeling difficult since most sediment transport relations are based on gravel or sand, and not a combination of the two. As a result, they have been forced to evaluate two different equations when preparing their model. The armored condition of the river bed and the sloughing of sediment from the training walls also make modeling difficult. They have also examined the Yuba River annual peak discharge from Englebright Dam to Marysville and 100-year flood hydrographs to look at the maximum objective flows.

For this study, Bob is using the HEC-6T sediment routing model and a hydraulic model developed by the Army Corps of Engineers. This model does a better job of dealing with mixed sediment loads. To assess flood impacts, they are using the HEC-6T as well as the HEC-RAS model. HEC-6T lacks the capability to deal with bridge conditions while HEC-RAS has that capability. Bob added that they are using data sources from the ACOE and the Yuba County Water Agency for bridge geometry, topographic and bathymetric data. Based on that data, the impacts from these areas are not too significant.

Bob explained the model validation process, noting that for hydraulics, they analyze high-water marks and gage ratings, while for sediment transport, they compare calculated figures with measured figures to determine two different model equations. These equations help predict coarse grade systems.

Other issues that need to be considered include the impacts of a potential modification of Daguerre Point Dam, the interface with the reservoir modeling, and the Wilcock-Crowe Equation and the effect of Sand Fraction. He concluded his presentation with outlining the next steps for the study, which consist of finishing the existing conditions modeling and conducting modeling of selected scenarios.

Janet said that there was a lot of discussion about the dams and asked who will make the decision about pre or post-Daguerre Dam. Bob answered that the Work Group will make the decision, but for the moment the assumption is that Daguerre will remain in place. John added that the Work Group is looking at water temperature modeling in the Upper Yuba watershed. He said that they have measured temperatures at fixed locations and are now modeling to see if colder temperatures will benefit anadromous fish habitat.

Stefan asked about the nature of the watershed and whether the armoring was native or from mining. Bob said that it is hard to determine, but that the sediment is somewhat coarser than it was during the pre-mining era. Also, he added that in the Middle Yuba, sediment supply is limited because it is so well armored there; the rocks are preventing all movement apart from very high flows. He stated that the cobbles present are not associated with historic hydraulic mining in the upper watershed.

Hamish asked what the process is for an increased transport rate. Bob said that it is class supported and greater than 30 percent matrix supported. Chris added that there is a supply from the training walls and that the hydraulic model shows you when you're at that point.

Niels wondered about the amount of debris in the Englebright reservoir and whether any mine debris is accumulating. John responded that there is more debris upstream but that the reservoir is continuing to fill with sediment. He stated that it is about 25 percent full. He suggested that Lorrie Flint is a good source for more information about sediment accumulation.

Daguerre Point Dam Fish Passage Improvement Project

Kip Young gave a presentation on ENTRIX's work with the Daguerre Point Dam Fish Passage Improvement Project. Kip explained that the 2002 report that they issued for the project was a collaborative effort with the Yuba County Water Agency, Jones and Stokes, and the Anadromous Fish Restoration Program. The lead agencies were the California Department of Water Resources and the U.S. Army Corps of Engineers (ACOE).

Kip explained that the purpose of the study was to identify the extent of the spawning habitat for Fall and Spring-Run salmon, determine how the dam may affect access to this habitat, and identify the potential benefits from enhanced fish passage at the Daguerre Point Dam. The study team identified the following questions as key to the scope of work: 1) how much suitable spawning habitat is available?; 2) What is the current level of habitat use?; 3) Would there be any net benefit to improving passage at Daguerre Point Dam?. They were also to consider other alternatives for the preparation of the EIS/EIR.

The three reaches along the Lower Yuba River for this study included Rose Bar, Parks Bar, and Daguerre Point Dam. Kip added that they had used USGS Gages to identify those reaches. He

mentioned that they used a variety of existing data resources including carcass counts conducted by the California Department of Fish and Game, U.S. Fish and Wildlife Service redd counts, and other surveys by YWCA and Jones & Stokes. Kip then showed charts where this data had been compiled to determine where Fall-Run and Spring-Run Chinook salmon redds were located. The study determined that the Spring-Run Chinook only spawn above Daguerre in very specific locations. Kip pointed out that data on Steelhead redds are very limited as it is much more difficult to collect that type of data. The survey data indicate that steelhead spawn above Daguerre Point Dam and most redds were located above the Hwy 20 bridge. Taking the number of Fall-Run Chinook for each reach and the number of redds in a given reach, ENTRIX determined the average number of adults per redd for the years 2000 and 2001.

ENTRIX also collected data on flow for the period from 1994-2001 and compared that information with spawning data above Daguerre. They determined that in years where the flow was above 2,000 cfs, the fish were slower at finding the fish ladder as there was a much lower percentage of spawning occurring above Daguerre Point Dam.

Kip then gave a summary of the findings of the study. He explained that fish ladders are most passable on the dam when flows are lower than 2,000 cfs, which is a significant factor considering that the majority of the spawning occurs upstream of Daguerre. They also found that Fall-Run Chinook tend to use the same Redds that Spring-Run Chinook use, which could pose a problem for the Spring-Run fish. Comparisons between the number of fall-run Chinook and the number of redds in the Yuba indicate there is not enough spawning habitat for the number of fish and this may be limiting the fall-run population as well.

Kip concluded his presentation by laying out the two alternatives for the EIS/EIR. If the fish passage were improved without dam modification, there would be no change in habitat quantity or quality, predation, or rearing conditions. On the other hand, the improved passage would increase access to spawning habitat and reduce the delay during the spawning run. The benefits for the other alternative, removing or modifying the dam, include improving access to spawning habitat while increasing habitat quantity and quality; eliminating delay and predation in the pool below the dam; and increasing habitat for rearing and emigration. Kip listed the negative impacts to this alternative as having potential disturbance and potential access upstream for predators.

Niels wondered how Kip had calculated the number of "adults per redd." Kip explained that they had calculated the number of fish and then divided that number by the number of new redds per mile. This number showed that there were so many fish in one area that they were spawning in the same location. Janet wanted to know how long of a stretch of the Lower Yuba that this study encompassed. Paul said that the study stretched 2.6 miles.

Steve Schoenberg expressed concern about the crowdedness of the redds and wondered if there might be a way to encourage fish to use other sites for spawning. Stefan said that they have used gravel injections from different watersheds, but the fish have not taken to the sites at all. However, if gravel is used from the same watershed, there is much more success. Bob added that in time the fish will take to the new sites. Steve also said that even with a finite amount of spawning that there is a huge number of fish; if spawning is increased 20-60,000 fish will come back. Stefan pointed out that one can't look at just one life stage and that right now the numbers are much lower than they should be. Kip added that the numbers could be increased. Steve said that based on spawning statistics, one could have two redds successfully rearing at the same time. Kip answered that this is a work in progress.

Steve also asked if the Yuba was significantly different from other rivers and whether those differences have been evaluated. Paul responded that this study was done for the ACOE because the river is fairly uniform throughout the reach being studied. He added that below the UC Station there is significant spawning habitat and that multiple fish use the same redd in this area. Hamish pointed out that there are behavioral aspects to take into consideration as well and that the problem is much more complex than just finding a new site for redds. Paul added that that in this stretch of the Yuba there is a lot of geomorphic stability because it is armored with good-sized material.

Next Meeting and Discussion Items:

- Next Meeting Date and Time: November 17, 1-4 pm
- Tentative Location: 2800 Cottage Way, Sacramento, cafeteria conference room C-1001
- Tentative Presentations:
 - Hamish Moir - Hydrodynamic modeling of salmonid spawning habitat at the Garcia gravel pit reach on the Yuba River
 - Rob Tull – Temperature Modeling for the Upper Yuba Studies Program

Upcoming dates for the next five Forum meetings are:

- November 17, 2004
- January 19, 2005
- March 16
- May 18
- July 20

Meeting Participants

Hamish Moir
Paul Wisheropp
Kip Young
Aric Lester
Stefan Lorenzato
Cesar Blanco
Chris Bowles
Niels Riegels
Steve Schoenberg
Fraser Sime
Bob Mussetter
Janet Cohen
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